

bushing *B* is adjusted to the correct position for guiding the drill into the work. It is clamped in place on the solid jaw by means of bolts *C*. To operate the jig, the movable jaw is opened and a piece of work inserted in the V-block; then it is only necessary to tighten the jaws and proceed to drill. In this way, duplicate parts are obtained without an elaborate jig. By using suitable plates in these jigs, many odd-shaped pieces can be drilled, of which Fig. 30 is a typical example. The method of using this plate is shown by the illustration. Bushings *A* are placed in the plate *B* at the proper location to guide the drills into the work. The plate is screwed on top of the vise, the stop *C* is adjusted to the proper location, and the work *D* placed in the vise against the stop, after which the holes are drilled.

This jig construction adapted to drilling holes on an angle is illustrated in Fig. 31. In this case, a swivel vise is fitted with a plate *A* set at the proper angle in relation to the base *B*. Then by swinging the vise up to the proper angle, the parts may be drilled in duplicate as in the previous case cited. That there are infinite possibilities in the fitting of vises with bushing plates, when these are intelligently used, will be readily seen by considering the methods of drilling illustrated in Fig. 32. This illustrates a swivel vise used as an indexing jig, and where extreme speed or accuracy is not required it works out very satisfactorily. The first drilling is done with the vise in the position illustrated. The subsequent drilling is accomplished by tilting the swivel vise to the right and left the desired number of degrees.

Another example of drilling in a vise is shown in Fig. 33, a number of holes being drilled around a circle. The work is gripped between the jaws in the vise proper and a bushing plate is located by pins *A* and *B* in the vise. By sliding the vise to various positions the holes are drilled in the usual manner. This bushing plate is removable for taking out the work.

The vises here illustrated are not always the most economical means of handling work, but they are often the best that the extent of the job will warrant. They must not be confused with more elaborate jigs and fixtures which, although vises